

## **DBI COV Summary of Issues for Consideration**

September 25, 2013

(Final version submitted for COV review: Oct. 23, 2013)

The COV appreciates the time and effort of the DBI scientific and administrative staff devoted to the preparation of materials for the COV to review. In particular, we are grateful to the administrative staff for logistical and technical support and also for providing necessary additional materials to e-jacket or by hard copy after we arrived on site. The COV would like to emphasize that we recognize and acknowledge the important contributions of DBI to the vitality of the biological sciences, particularly with respect to the development and support of a substantial research and human capital infrastructure for the disciplinary domain. Our overall assessment is that the work of DBI has been exemplary, particularly with respect to the integrity of the review process and the development of a robust program portfolio. In the COV template and in response to the COV open-ended questions, we have provided our perspective in the management of the division during the review period. In addition, although the 2013 DBI self-study did not request that the COV respond to specific areas such that we would target our recommendations, we would like to raise the following issues for DBI's consideration.

The COV appreciates the opportunity to understand better the workings of DBI. In addition to our assessments included in the COV template, we offer recommendations that have emerged from our study of the materials, conversations with DBI and BIO staff at all levels, and general observations over the three days of our site visit.

1. **Broader impacts.** We recommend that DBI lead the development of a Directorate-wide process to assess the effectiveness and impact of the "broader impacts" criterion, with attention to how the community has responded to changes in the guideline language for this criterion. In particular, we think it is important to know how well projects broaden participation and integrate research and education. Are there ways to increase the relevance and utility of this criterion--e.g., by requiring evidence in the proposal; by training reviewers; by training program officers? How can annual and final reports be used to assess how well the goals for broader impacts are actually being achieved? Outcomes are important!
2. **Communications.** Because DBI focuses on the infrastructure that supports many activities across the Directorate, effective communications are critically important. We recommend that the DBI intentionally increase its efforts and improve its skills in communications within DBI and between DBI and other parts of the Foundation.
3. **Assessing synthesis centers.** We recommend that DBI, perhaps in collaboration with SBE, lead the development of a robust process to assess the effectiveness of a synthesis center. The assessment should begin with a clear enunciation of the desired outcomes, and include the activities of training and outreach. This process should be used in evaluating current centers as well as in the design of new centers.
4. **Managing synthesis centers.** We recommend that DBI lead the development of a protocol by which each center is created and subsequently managed. The protocol should be assessed frequently and made transparent to the rest of the Directorate as well as the communities served by

the Centers.

5. Facilitating transformation. Recognizing that transformation can require transformative strategies, we recommend that DBI, working with the rest of the Directorate, develop strategies by which it can measure how well the infrastructure leads to transformative science. These strategies should include assessing the role of centers in encouraging transformation in the content and “pedagogy” (or culture) of science.

6. Undergraduate education. We recommend that DBI lead the development of Directorate-wide strategies to increase the effective integration of biology research and undergraduate education.

7. Self-reflection and measurement of progress. We recommend that DBI and the Directorate develop effective mechanisms through which they will track their progress on the recommendations that emerge from processes such as the COV. Documentation should detail how each level of the Foundation responds to recommendations, as appropriate.

The 2013 COV found particular challenges with the mechanics of the COV process. There appears to have been missed communication regarding the most helpful materials for the COV process. This resulted in insufficient guidance through the webinar regarding how to approach the review of materials. For those COV members who had not participated in such a process before, understanding what elements might be absent from e-jacket was difficult to ascertain before arriving at NSF. A more detailed self-study coupled with a more comprehensive overview of the materials available for review would have expedited the COV review.

The shortcomings of the COV template were particularly apparent for the Center proposals, where significant elements were missing from some of the jackets provided for review. Further, the COV template does not adequately allow for the analysis of infrastructure and complex entities such as Centers within the parameters of sections I-III. The COV attempted to adequately analyze the management issues associated with Centers, particularly given the distributed nature of BIO’s intellectual and management approach, but found it challenging within the parameters of the COV process. If DBI and the Biological Sciences Directorate are to continue to utilize a distributed and bifurcated approach to intellectual and management issues, we recommend that the communication channels among the program directors responsible for these intersecting threads be focused and enhanced over the apparent structural framework.

The COV members sincerely hope that the COV review, recommendations, and issues for consideration are helpful to the Division of Biological Infrastructure. We see this division as pivotal to the research and education efforts of the Biological Sciences Directorate. In addition, we commend the outstanding work of the DBI senior leadership and program directors as they continue to serve the broader biological science community.